

1. A method of applying a protective overcoat to a surface of a printed transparency, the method comprising:

applying heat and pressure to a donor web having a carrier side comprising carrier ribbon material and a transfer side comprising protective overcoat material, wherein  
5 the heat and pressure facilitate release of a section of the transfer side from adhering to the carrier side of the donor web and facilitate transfer of the section of the transfer side to adhering to the surface of the transparency.

2. The method of claim 1 wherein heat and pressure are applied to the  
10 donor web while the section of the transfer side is positioned against the surface of the transparency and the transparency is supported by a base.

3. The method of claim 2, wherein heat is applied to the section of the transfer side by a heating element applied to a section of the carrier side of the donor  
15 web adjacent to the section of the transfer side.

4. The method of claim 3, wherein pressure is applied to the section of the transfer side by controlled contact between the heating element applied to the section of the carrier side and the base supporting the transparency, the donor web  
20 and the transparency being sandwiched between the heating element and the base.

5. The method of claim 1, wherein pressure is applied to the section of the transfer side by controlled contact between a pressing element applied to a section of the carrier side of the donor web adjacent to the section of the transfer side, the  
25 donor web and the printed transparency being sandwiched between the pressing element and the base.

6. The method of claim 5, wherein the pressing element comprises at least one roller element.

7. The method of claim 5, wherein the pressing element comprises at least one die element.

8. The method of claim 1, wherein at least a portion of an exterior surface of the base comprises a surface material resistant to adhering to the section of the transfer side.

9. The method of claim 8, wherein the surface material is selected from the group consisting of a fluororesin coating, a fluorocarbon coating, and a fluoropolymer coating.

10. The method of claim 8, wherein the surface material is selected from the group consisting of (poly)-tetrafluoroethylene (PTFE), perfluoroalkoxy (PFA), fluorinated ethylene propylene (FEP), ethylene tetrafluoroethylene (ETFE), ethylene chlorotrifluoroethylene (ECTFE), polyvinylidene fluoride (PVDF), their derivatives, and combinations thereof.

11. The method of claim 8, wherein the surface material is silicone oil.

12. The method of claim 1, wherein heat is applied to only a subsection of the section of the transfer side, so that only the subsection to which heat is applied adheres to the surface of the printed transparency.

13. The method of claim 1, wherein pressure is applied to only a subsection of the section of the transfer side, so that only the subsection to which pressure is applied adheres to the surface of the printed transparency.

14. The method of claim 1, wherein the section of the transfer side has at least one of a surface width greater than the surface's surface width and a surface length greater than the surface's surface length, so that only a subsection of the

section adheres to the surface, the subsection having a surface width equal to or less than the surface's surface width and a surface length equal to or less than the surface's surface length.

5           15.     The method of claim 1, wherein the base comprises at least one roller.

16.     The method of claim 1, wherein the base comprises a platen.

10           17.     The method of claim 1, wherein the transfer side of the donor web comprises more than one layer.

18.     The method of claim 17, wherein at least one layer of the transfer side comprises thermoplastic resin material.

15           19.     The method of claim 18, wherein the thermoplastic resin material is selected from the group consisting of acrylic, polyolefin, polyester, their derivatives, and combinations thereof.

20           20.     The method of claim 17, wherein at least one layer of the transfer side comprises a barrier layer resistant to penetration by liquid and air.

21.     The method of claim 20, wherein the barrier layer comprises a polymeric material selected from the group consisting of polyvinylidene chloride, polyvinylidene fluoride, their derivatives, and combinations thereof.

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22.     The method of claim 1, wherein the carrier side of the donor web comprises more than one layer.

23.     The method of claim 22, wherein at least one layer of the carrier side is selected from the group consisting of thermoplastic resin material and high-density tissue.

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24. The method of claim 23, wherein the thermoplastic resin material is a polyester.

25. The method of claim 1, wherein the section of the transfer side  
5 transferred to adhering to the surface has a surface finish selected from the group consisting of matte finish and gloss finish.

26. The method of claim 1, wherein, when the section of the transfer side  
is transferred to adhering to the surface, at least one textured pattern is stamped onto  
10 an exterior surface of the section .

27. The method of claim 1, wherein, when the section of the transfer side  
is transferred to adhering onto the surface , at least one textured pattern is applied  
onto an exterior surface of the section.

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28. The method of claim 1, wherein the section of the transfer side  
transferred to adhering to the surface has improved features selected from the group  
consisting of matte uniformity and gloss uniformity.

29. The method of claim 1, wherein the section of the transfer side  
20 transferred to adhering to the surface improves durability of the at least one surface  
through addition of at least one of indoor light fade resistance, ultraviolet light fade  
resistance, resistance to liquid penetration, resistance to vapor penetration, scratch  
resistance, and blocking resistance.

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30. The method of claim 1, wherein the section of the transfer side  
transferred to adhering to the surface improves durability and quality of the printed  
image of the at least one surface through addition of at least one of dry time  
optimization, optimization of the adhering of the section of the transfer side to the  
30 surface of the printed transparency and optimization of release of the section of the  
transfer side from adhering to the carrier side of the donor web.

31. The method of claim 22, wherein the carrier side of the donor web further comprises a lubricant layer as an exterior layer of the carrier side, the lubricant layer preventing wear of a surface of the heating element coming in contact with carrier side of the donor web.

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32. The method of claim 17, wherein the transfer side of the donor web further comprises a release layer as an interior layer of the transfer side adjacent to the carrier side, the release layer facilitating release of the section of the transfer side from adhering to the carrier side of the donor web.

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33. The method of claim 17, wherein the transfer side of the donor web further comprises an adhesive layer as an exterior layer of the transfer side, the adhesive layer enhancing adhering of the section of the transfer side to the at least one surface of the printed transparency.

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34. The method of claim 3, wherein the heating element is selected from the group consisting of a heated roller, a heated die element, a ceramic heater element, and thermal print-head elements.

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35. The method of claim 1, wherein the at least one surface of the printed transparency further comprises a layer that optimizes adhering the section of the transfer side to the at least one surface of the printed transparency, the adhering to the at least one surface being strong enough to facilitate release from the adhering of the section of the transfer side to the carrier side of the donor web.

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36. A protective overcoat for a printed transparency, the protective overcoat made by the method of claim 1.

37. A printed transparency having a protective overcoat made by the method of claim 1.

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38. A donor web providing a protective overcoat to a printed transparency, the donor web having:

- 5 a) a carrier side comprising a carrier ribbon layer and a lubricant layer as an exterior layer preventing wear of a surface of a heating element or pressing element, the surface coming in contact with the carrier side of the donor web;
- b) a transfer side comprising a protective overcoat material, a release layer as an interior layer adjacent to the carrier side, the release layer facilitating release of the transfer side from the carrier side; and an adhesive layer as an exterior layer of the transfer side, the adhesive layer enhancing adhering of a
- 10 section of the transfer side to form the protective overcoat on the printed transparency.

39. The donor web of claim 38, wherein there is more than one layer of protective overcoat material in the transfer side.

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40. The donor web of claim 39, wherein at least one of the layers of protective overcoat material comprises a barrier material.

41. An apparatus comprising a donor web having a carrier side comprising carrier ribbon material and a transfer side comprising protective overcoat material, a means of applying a protective overcoat to at least one surface of a printed transparency, by applying heat and pressure to the donor web, wherein the heat and pressure facilitate release of a section of the transfer side from adhering to the carrier side of the donor web and facilitate transfer of the section of the transfer side to

20 adhering to the surface of the printed transparency.

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42. The apparatus of claim 41, wherein the surface is a printable surface.

43. The apparatus of claim 41 further comprising:

30 a means of positioning the section of the transfer side against the surface of the printed transparency, while heat and pressure are applied to the donor web; and

a base to support the printed transparency while the section of the transfer side is being positioned against the surface of the printed transparency.

44. The apparatus of claim 41, wherein heat is applied to the section of the transfer side by a heating element applied to the carrier side of the donor web.

45. The apparatus of claim 44, wherein pressure is applied to the section of the transfer side by controlled contact between the heating element and the base, with the donor web and the printed transparency sandwiched between the heating element and the base.

46. The apparatus of claim 41, wherein pressure is applied to the section of the transfer side by controlled contact between a pressing element applied to a section of the carrier side of the donor web adjacent to the section of the transfer side, the donor web and the printed transparency being sandwiched between the pressing element and the base.

47. The apparatus of claim 46, wherein the pressing element comprises at least one roller element.

48. The apparatus of claim 41, wherein at least a portion of an exterior surface of the base comprises a surface material resistant to adhering to the section of the transfer side.

49. The apparatus of claim 48, wherein the surface material is selected from the group consisting of a fluororesin coating, a fluorocarbon coating, and a fluoropolymer coating.

50. The apparatus of claim 48, wherein the surface material is selected from the group consisting of (poly)-tetrafluoroethylene (PTFE), perfluoroalkoxy (PFA), fluorinated ethylene propylene (FEP), ethylene tetrafluoroethylene (ETFE),

ethylene chlorotrifluoroethylene (ECTFE), polyvinylidene fluoride (PVDF), their derivatives and combinations thereof.

51. The apparatus of claim 48, wherein the surface material is silicone oil.

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52. The apparatus of claim 41, wherein heat is applied to only a subsection of the section of the transfer side, so that only the subsection to which heat is applied adheres to the surface of the printed transparency.

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53. The apparatus of claim 41, wherein pressure is applied to only a subsection of the section of the transfer side, so that only the subsection to which the pressure is applied adheres to the surface of the printed transparency.

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54. The apparatus of claim 41, wherein the section of the transfer side has at least one of a surface width greater than the surface's surface width and a surface length greater than the surface's surface length, so that only a subsection of the section adheres to the surface, the subsection having a surface width equal to or less than the surface's surface width and a surface length equal to or less than the surface's surface length.

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55. The apparatus of claim 41, wherein the base comprises at least one roller.

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56. The apparatus of claim 41, wherein the base comprises a platen.

57. The apparatus of claim 41, wherein the transfer side of the donor web comprises more than one layer.

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58. The apparatus of claim 41, wherein the at least one layer of the transfer side comprises thermoplastic resin material.



59. The apparatus in claim 41, wherein the apparatus further comprises an electrophotographic printer component, the electrophotographic printer component applying a printed image to the surface of the printed transparency before the section of the transfer side is transferred to adhering to the surface of the printed  
5 transparency.

60. The apparatus in claim 41, wherein the section of the transfer side is transferred to adhering to the surface of the printed transparency, the surface having an image already applied by a printer separate from the apparatus.  
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61. The apparatus in claim 41, wherein the apparatus is a module installable as a component of a separate printer.

62. The apparatus in claim 58, wherein the thermoplastic resin material is  
15 selected from the group consisting of acrylic, polyolefin, polyester, their derivatives and combinations thereof.

63. The apparatus of claim 57, wherein at least one layer of the transfer side comprises a barrier layer resistant to penetration by liquid and air.  
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64. The apparatus of claim 63, wherein the barrier layer comprises a polymeric material selected from the group consisting of polyvinylidene chloride, polyvinylidene fluoride, their derivatives and combinations thereof.

65. The apparatus of claim 41, wherein the carrier side of the donor web  
25 comprises more than one layer.

66. The apparatus in claim 65, wherein at least one layer of the carrier side is selected from the group consisting of thermoplastic resin material and high-density tissue.

30 67. The apparatus in claim 66, wherein the thermoplastic resin material is a polyester.

68. The apparatus in claim 41, wherein the section of the transfer side transferred to adhering to the surface has a surface finish selected from the group consisting of matte finish and gloss finish.

5 69. The apparatus in claim 41, wherein the apparatus further comprises a means of stamping at least one textured pattern onto an exterior surface of the section of the transfer side transferred to adhering to the surface of the printed transparency.

70. The apparatus in claim 41, wherein the apparatus further comprises a  
10 means of heating and pressing at least one textured pattern onto an exterior surface of the section of the transfer side transferred to adhering to the surface of the printed transparency.

71. The apparatus of claim 41, wherein the section of the transfer side  
15 transferred to adhering onto the surface has improved features selected from the group consisting of matte uniformity and gloss uniformity.

72. The apparatus of claim 41, wherein the section of the transfer side transferred to adhering to the surface improves durability of the surface through  
20 addition of at least one of indoor lightfade resistance, ultraviolet light fade resistance, resistance to liquid penetration, resistance to vapor penetration, scratch resistance, and blocking resistance.

73. The apparatus of claim 43, wherein the section of the transfer side  
25 transferred to adhering to the surface improves durability and quality of the printed image of the surface through addition of at least one of dry time optimization, optimization of the adhering of the section of the transfer side to the surface of the printed transparency, and optimization of release of the section of the transfer side from adhering to the carrier side of the donor web.

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74. The apparatus of claim 65, wherein the carrier side of the donor web further comprises a lubricant layer as an exterior layer of the carrier side, the lubricant

layer preventing wear of a surface of the heating element coming in contact with the carrier side of the donor web.

75. The apparatus of claim 57, wherein the transfer side of the donor web  
5 further comprises a release layer as an interior layer of the transfer side adjacent to the carrier side, the release layer facilitating release of the section of the transfer side from adhering to the carrier side of the donor web.

76. The apparatus of claim 41, wherein the transfer side of the donor web  
10 further comprises an adhesive layer as an exterior layer of the transfer side, the adhesive layer enhancing adhering of the section of the transfer side to the surface of the printed transparency.

77. The apparatus in claim 44, wherein the heating element is selected  
15 from the group consisting of a heated roller, a heated die element, a ceramic heater element, and thermal print-head heating elements.

78. The apparatus of claim 41, wherein the surface of the printed  
transparency further comprises a layer that optimizes adhering the section of the  
20 transfer side to the surface of the printed transparency, the adhering to the surface being strong enough to facilitate release from the adhering of the section of the transfer side to the carrier side of the donor web.